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ABSTRACT

A program started in Washington County, Maryland in 1980 has been successful in saving school bus fuel and bringing down transportation costs incurred by its fleet of 200 buses. Driver training and motivation, as well as a partial transfer to diesel buses, are at the heart of the program. The drivers are taught five fuel saving techniques: cut unnecessary idling, drive within the speed limit, accelerate and brake gently, keep an eye on traffic ahead, and shift at lower speeds. The motivational system includes dividing drivers and buses into competing groups, issuing monthly "report cards" showing mileage and fuel economy, and charting each driver's status in the school so students can support their drivers. The entire community is involved through publicity campaigns featuring details of the program and of savings to the community. The driver program had very low costs, showed a 6.8 percent improvement in fuel savings, and brought good "press" for the school system. The purchase of six diesel buses cost the county an additional $4,000 initial investment per bus, while providing a 66 percent increase in efficiency in fuel consumption and a savings on vehicle maintenance during the first year. The fleet now includes 20 diesel-powered buses. (MD)

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How to Cut Costs by Saving School Bus Fuel

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Motor Vehicle Manufacturers Association

October 17, 1984

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Slide

1 There's money in school bus fuel savings

2 How much money? At one dollar a gallon the total cost of school bus fuel consumed nationwide each year is about $400,000,000!

3 That's a lot of money. But nationwide, the amount of fuel used in school buses is relatively small. Of the almost 250 billion gallons of petroleum used yearly nationwide, over half is burned in transportation. Of the over 100 billion gallons used yearly in highway transportation, all buses use less than 1 percent, just a bit over one billion gallons. And school buses use approximately 400 million gallons a year, or four-tenths of a billion.

The good news nationwide is that consumption of petroleum by the transportation sector of the economy has been dropping from a high of 145 billion gallons a year in 1978 to 133 billion in 1983 while the number of motor vehicles and vehicle miles traveled has continued to increase.

4 Although in total school buses use a very small part of the nation's petroleum fuel, the fuel costs in your district may amount to a substantial part of your budget. In Washington County, Maryland, with 17,000 pupils per day bused, $300,000 was budgeted for fuels and lubricants in a recent year.

In 1980 I managed the Department of Transportation's Voluntary Truck and Bus Fuel Economy Program. We felt we could work with a school district to show significant school bus fuel economy savings through driver training and motivation. And by working

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with the school bus fleet we hoped to show students, their parents and the entire community that it was easy to save fuel and save money in their own driving. Washington County's Supervisor of Pupil Transportation was willing to work with us to try our experiment, which if successful, we hoped would be followed State and even nationwide.

5 I'll go into some details about how the program worked in Washington County in a few minutes. And I brought a few copies of a report which goes into detail on the program and its results in case you'd like to follow up on it in detail.

In summary, Washington County had about 200 buses, half contract, half county owned and operated. They drove their buses about 1 3/4 million miles a year and averaged 4.88 mpg during the baseline period when we measured fuel economy before starting the program. Through driver training and motivation alone, Washington County got a 6.8% improvement in miles per gallon during the one-year test period. At $1 a gallon for fuel, that saved them almost $23,000 during the test period.

Washington County bought its first six diesel-powered school buses as a second part of our fuel-saving experiment. The savings shown here are from driver training and motivation alone - diesel bus data is kept separately. The six diesels showed a 66% improvement in miles per gallon and have been well accepted by the county, which now operates over 20. More about diesel engines later.

6 A fuel-saving program can work. But before considering such a program for your district you ought to consider two things.

7 The first is how you fund fuel costs in your district. This is an area where I am far from expert. But I understand that States and districts fund transportation and fuel costs in various ways. Some of these funding methods are such that all

your cost savings will go back to the State or the county and nothing will remain with the school system or the transportation department. For example, if pupil transportation is funded Statewide at "x" cents per pupil mile, and any costs above that "x" cents are borne by the county and any savings which reduce costs to below "x" go back to the State, the school system might be able to save money for the State or the county, but do all the work with no direct benefit itself.

So, unless you are so altruistic that you're willing to have your school system work hard and the benefits go to someone else, look at how your fuel costs are funded before you begin. And if you find a system where savings wouldn't directly benefit you, but you're still interested in trying it, see if you can work out some special arrangement with the State or county.

At the time Washington County began their fuel-saving program, the State of Maryland reimbursed districts for transportation costs based on number of pupils, miles traveled, number of buses, and past costs. If a district were able to cut costs to below the State-allocated amount, the savings went back to the State. But State authorities were flexible enough to work out a special arrangement with the county, such that they would be allowed to keep their savings and apply them to improvements in the program and in the transportation system in future years. State authorities were sufficiently interested in the fuel-saving program, and its Statewide applications, to fully cooperate.

Maryland has since adopted a new funding system which provides an incentive to each school district to cut fuel costs. The new system sets a relatively low State grant with additional costs to be made up by the school system. Therefore savings normally mean less additional costs for the school system, and any system which can get down below the State grant can retain the extra money for other transportation projects, as I understand the system.

8 The second thing to consider before starting on a fuel-saving program is, it's hard work. And, if you are at all similar to Washington County, it may be hard work to be done by your present staff, with little or no additional funding or personnel.

9 In order to understand why it's such hard work, I have to tell you something about the program we ran in Washington County.

I have found that a driver training and motivation program takes three things, management, measurement and motivation.

"Management" means that company or school district management must be fully behind the program. The drivers very quickly sense a half-hearted attempt or a program where top management itself doesn't follow the rules set up. It would take only one instance where the transportation director or superintendent's car is left idling while he goes in for coffee and all the drivers will know about it and discount everything he says about fuel economy from then on.

"Measurement" means that you must keep track of how your drivers are doing in improving their miles per gallon, and you must let them know often.

"Motivation" is probably the hardest of the three. It isn't hard, I contend, to teach someone <u>how</u> to drive for good fuel economy, but it is extremely difficult to make them <u>want</u> to do it.

As I mentioned earlier, in Washington County the purchase of diesel-powered school buses was a separate part of our fuel-saving program. Diesels behave somewhat differently from gas-powered buses, and in Washington County the mechanics had never worked on a diesel bus before. But that part of the program was successful too and the county continues to buy greater numbers of diesels, now getting almost twice the miles per gallon in its diesel buses.

10 Bus driver training was accomplished in one three-hour training session which all drivers were required to attend.

11 The training included pep talks by visiting dignitaries from the federal Department of Transportation, the State of Maryland and the County School Board, technical discussions of fuel saving saving and the motivational program which was to be instituted, and a movie on school bus fuel saving.

12 The major points we wanted to leave with the drivers were simply five fuel-saving "tricks." If the driver remembered these "tricks," and used them, he or she would be successful.

Cut out unnecessary idling
Keep speed within the speed limit
Accelerate and brake gently
Keep an eye on traffic ahead
Shift at lower speeds

13 We also explained the motivational system which would be used. Drivers would continue to keep track of bus mileage and fuel used, since they gassed up the buses themselves. The county's driver trainers would divide drivers and buses into groups so that drivers would compete with other drivers using similar buses and driving over similar types of routes. Monthly "report cards" would be issued to drivers, showing their mileage during the baseline period and each month of the fuel-economy program. And those "report cards" would be provided to the school from which the drivers operated, with each driver's status being shown on a chart in the main hall of the school so students could cheer on their drivers.

14 A major part of our program was the involvement of the entire community. Here the deputy chairman of the school board and the transportation supervisor pin a large fuel-saving sticker to one of the gas pumps, smiling so the local newspapers could get photos.

We issued a press release to the local media, telling them of the school system's planned fuel-saving program and inviting them to the training sessions. Our plans were to continue to involve local press and radio and TV stations, to keep up community interest, help motivate the drivers, and to interest community motorists in saving fuel with their own vehicles. Plans also included newspaper, radio and TV interviews with "winning" drivers and perhaps with some of their bus riders.

Everything which had been planned, in terms of motivational efforts and community publicity, did not go totally as planned. Lack of time and "personpower" kept us from trying everything in our bag of tricks.

15 After the technical sessions, pep talks and movie at our three-hour training session, drivers were taken for a bus ride over a short course which we had laid out earlier.

16 The head driver trainer drove the bus and explained how we would use the course and this instrumented bus as part of our training program.

17 The bus had been equipped with a fuel flowmeter which was able to read total fuel used over the route in hundreths of a gallon. While still keeping track of fuel used over the course, it also read out instantaneous miles per gallon. Through the use of the flowmeter a driver could run through the course using his own techniques, then try one or more of the fuel-saving "tricks" which the instructor recommended. The driver could easily see how much various techniques would improve his miles per gallon. The instrumented bus was a real hit with the press, the drivers and visiting dignitaries alike. It was later used for retraining drivers whose fuel economy failed to improve substantially.

18 In summary, these are the costs and benefits of the driver training and motivation program and the diesel vehicle experiment. The driver program featured

- o very low out-of-pocket costs
- o a 6.8% improvement in miles per gallon
- o potential good "press" in the community - an opportunity to show what the school system was doing to help the community cut its educational costs and/or improve its effectiveness
- o the potential to work conservation into the educational curriculum through student interest in the program or through conservation units in the curriculum

The diesel program

- o cost Washington County almost $4,000 additional initial investment per bus.
- o provided a 66% increase in miles per gallon.

Diesels also generally require less maintenance than gas engines, last longer and need special care in getting them started on cold mornings. They also may have less power than gasoline buses.

19 In this presentation, I have not covered alternative fuels other than diesel fuel, nor have I mentioned anything about the myriad fuel-saving devices, additives and ideas which may have been brought to the attention of your transportation department. I will be happy to discuss either or these issues or any other part of the presentation which interests you.

TOTAL COST OF SCHOOL BUS FUEL

$400 MILLION PER YEAR

SLIDE 2

FUEL USE

All Petroleum	248 Billion Gallons
Transportation	131 Billion Gallons
Highway Transportation . .	111 Billion Gallons
All Buses	1 Billion Gallons
School Buses	0.4 Billion Gallons

SLIDE 3

YOUR FUEL COSTS????

WASHINGTON COUNTY, MD
17,000 Pupils Per Day Bused
1.75 Million Miles Of Operation
$2,540,000 Transportation Budget
$300,000 For Fuels And Lubricants

SLIDE 4

ACTUAL TEST RESULTS

WASHINGTON COUNTY, MD

Baseline Period 9/80 - 1/81	Test Period 2/81 - 1/82
4.88 mpg	5.21 mpg

MONEY SAVED PER YEAR $22,714
(1.75 Million Miles, $1 Per Gallon Fuel)

SLIDE 5

HOW ARE FUEL COSTS FUNDED?

(OR, "DO I GET ANYTHING FOR MY EFFORT")

SLIDE 7

HERE'S WHAT WE DID IN WASHINGTON COUNTY

DRIVER PROGRAM

- **Management**
- **Measurement**
- **Motivation**

DIESELS

SLIDE 9

FUEL SAVING TRICKS

1. Cut Out Unnecessary Idling
2. Keep Speed Within The Speed Limit
3. Accelerate And Brake Gently
4. Keep An Eye On Traffic Ahead
5. Shift At Lower Speeds

COSTS/BENEFITS

DRIVER PROGRAM

- Very Low Out-Of-Pocket Costs
- 6.8% Fuel Economy Improvement
- Potential Good Press
- Potential To Work Conservation Theme Into Curriculum

DIESELS

- $3,869 Per Bus Incremental Cost In 1981
- 66% Fuel Economy Improvement

SCHOOL BUS FUEL CONSERVATION AREAS NOT COVERED

- Alternative Fuels
- Fuel Saving Devices

SLIDE 19